

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of :  
 :  
Craig S. LaMoy et al :  
 : Atty. Docket No.: NC79363A  
Continuation of :  
Serial No: 09/504,396 : Group Art Unit: 1724  
 :  
Filed: November 29, 2001 : Examiner: Frank M. Lawrence  
 :  
For: Air Supply System Particularly Suited to :  
Remove Contaminants Created by :  
Chemical, Biological or Radiological :  
Conditions :

**PRELIMINARY AMENDMENT UNDER 37 C.F.R. §1.111**

Honorable Assistant Commissioner  
for Patents  
Washington, D.C. 20231

Dear Sir:

Prior to examination of the above-identified application on the merits, please amend the application as follows:

**IN THE SPECIFICATION:**

Page 9, lines 11-22, please amend the paragraph to read as follows:

The protected zone 12 further preferably includes an opening with an input and an output, wherein a pressure control valve (PCV) 40 is installed. The pressure control valve (PCV) 40 provides fluid communication between the input and output of the opening and is dimensioned, in a manner known in the art, so as to allow for fluid communication therebetween when the positive pressure within a protective zone is greater than about 1.5 inches wg. Preferably the protected zone 12 includes the use of one pressure control valves 40, which is used to relieve excess air from the

protected zone 12 and prevent excessive pressure therein from creating undesired air leaks.

Page 10, line 5 through page 11, line 9, please amend the paragraph to read as follows:

The preheater 44 conditions the air before it enters the three-stage air filter apparatus 18, which may be further described with reference to Fig. 2. As seen in Fig. 2, the three filters 20, 22, and 24 of the three-stage air filter apparatus 18, already discussed with reference to Fig. 1, are annular in shape and coaxially arranged, with filter 20 being dimensioned to be insertable into filter 22 which, in turn, is dimensioned so as to be insertable into filter 24. The filters 20, 22, and 24 are radial flow types, wherein air enters the inner (filter 20) diameter area and flows radially outward through the larger (filter 24) diameter surface. The first filter 20 has a typical outer diameter of twelve (12) inches and has a typical length of 10 inches. The first filter is a pleated-medium which filters and removes particles of at least a first or relatively small size. The second filter 22 filters and removes aerosols and particulates of a size which is less than the first size of the particles being removed by the first filter 20. The second filter 22 is selected of a material, known in the art, for removing solid and aerosol chemical, biological and radiological contaminants. The third filter 24 comprises a gas adsorber which removes gases. The third filter 24 contains activated charcoal (aszm-teda charcoal (chromium free)) selected, in a manner known in the art, for removing chemical warfare gases. The placement of the three-stage air filter apparatus 18 and further details thereof within a system, such as that of system 10, may be further described in reference to Fig. 3.

Page 11, lines 10-16, please amend the paragraph to read as follows:

Fig. 3 illustrates one three-stage air filter apparatus 18 further having a gas cover 46 that is placed over the third filter 24 and a NEPA cover 48 which is placed

over the second filter 22 and a clamp 52, which is over the third filter 20. The gas cover 46 and NEPA cover 48 are attached by a nut 50, whereas the third filter 20 is attached by way of a clamp 52 and a nut 54.

Page 12, lines 3-11, please amend the paragraph to read as follows:

The input air originally from inlet 16 of Fig. 1 is indicated in Fig. 3 by directional arrow 62, and a watertight access door 64, similar to those used for the air locks 32, is generally indicated by reference number 64 and forms part of a bulkhead 66. The support for the openings 56 is provided by the bulkhead 68 and the structural support of the outer plenum 58 is provided by a deck 70. The output air exiting from the outer plenum 58 is indicated in Fig. 3 by directional arrow 60. The operation of the system 10 can be further described with reference to Fig. 4.

#### **IN THE CLAIMS:**

Please AMEND claims 1, 5, 11, and 14 to read as follows:

1. A system for supplying an enclosed protected zone having air intake means with supply having an inlet and that is filtered to remove contaminates created by chemical, biological or radiological conditions, said system comprising:

a) a three-stage air filter apparatus having an input fluidly coupled to said inlet and having an input, said three-stage air filter apparatus having a first, second and third coaxially arranged annular filters, with the first filter being disposed within the second filter and the second filter being disposed within the third filter, and with the first filter being positioned closest to said input and the third filter being positioned closest to said output, said first filter filtering and removing particulates of at least a first size, said second filter filtering and removing aerosols and particulates of a size which is less than said first size, and said third filter comprising a gas adsorber for removing gases; and

b) a supply fan having an input fluidly coupled to said output of said three-stage air filter apparatus and an output fluidly coupled to said air intake means of said protected zone, said supply fan supplying an air at a sufficient enough flow so as to provide said protected zone with a positive pressure.

5. The system according to claim 4, further comprising an alarm device connected to receive the output of said transducer and generating an alarm signal when said output of said transducer is representative of a pressure of below about 0.5 in. wg.

11. A method for supplying an enclosed protected zone having air intake means with supply having an inlet and that is filtered to remove contaminates created by chemical, biological or radiological conditions, said method comprising the steps of:

a) providing a three-stage air filter apparatus having an input fluidly coupled to said inlet said three-stage air filter apparatus having a first, second and third coaxially arranged annular filters, with the first filter being disposed within the second filter and the second filter being disposed within the third filter, and with the first filter being positioned closest to said input and the third filter being positioned closest to said output, said first filter filtering and removing particulates of at least a first size, said second filter filtering and removing aerosols and particulates of a size which is less than said first size, and said third filter comprising a gas adsorber for removing gases; and

b) providing a supply fan having an input fluidly coupled to said output of said three-stage air filter apparatus and an output fluidly coupled to said air intake means of said protected zone, said supply fan supplying a sufficient flow of air so as to provide said protected zone with a positive pressure within the range from about 0.5 in wg. to about 1.5 in wg.

14. The method according to claim 13, further comprising the step of providing an alarm device connected to receive the output of said transducer and generating an alarm signal when said output of said transducer is representative of a pressure of below about 0.5 in wg.

Please ADD new claims 18-20, which read as follows:

18. A system for supplying an enclosed protected zone with air cleaned of chemical, biological, and radiological contaminants at a flow rate sufficient to maintain a positive pressure within the protected zone, comprising:

a free-standing first filter that filters and removes particulates of at least a first size from the air;

a free-standing second filter that filters and removes aerosols and particulates of a size which is less than the first size from the air;

a free-standing third filter that adsorbs gases from the air; and

a blower pneumatically coupling the downstream side of the third filter with the protected zone,

wherein:

the first, second and third filters are annular filters axially nested one inside the other in the recited order; and

the first, second, and third filters are radial flow filters.

19. The system according to claim 18, further comprising:

a filter housing including an axial opening for receiving the first, second, and third filters, and an annular opening receiving cleaned air from the downstream side of the third filter; and

a plenum pneumatically coupling the annular opening and the blower.

20. The system according to claim 19, wherein the second and third filters are held in place by retaining mechanisms while the first filter is frictionally fit into the second filter to thereby permit change out of the first filter while the blower supplying the cleaned air to the protected zone is operating.

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**REMARKS**

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Claims 1-20 are pending in the application as a result of the instant Amendment. In the Amendment, claims 1, 5, 11, and 14 are amended for clarity, i.e., claims 1, 5, 11 and 14 have been amended to correct for errors in grammar and not for purposes of narrowing the claims. Moreover, claims 18-20 are amended to recite features previously disclosed (See Figs. 2 and 3 and the corresponding discussion in the specification.) but unclaimed.

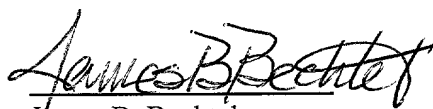
Moreover, the specification is amended on page 12, lines 3-11, to provide a description for directional arrow 60, while the paragraph on page 9, lines 11-22 has been amended to conform the specification to agree with the recitations of claims 6 and 15. In addition, the specification has also been amended to correct for noted informalities.

It is respectfully submitted that the instant Amendment does not introduce new matter into the application. It is also respectfully submitted that the Preliminary Amendment places the above-identified application in even better condition for initial examination.

In light of the amendments and remarks presented above, it is respectfully submitted that the application is in condition for allowance, and such action is hereby solicited.

If any points remain in issue which the Examiner feels may best be resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,



James B. Bechtel

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Phone: (202) 781-3108

Date: November 29, 2001

Atty. Docket No.: NC 79363A

**APPENDIX SHOWING CHANGES MADE VIA AMENDMENT****In the Specification**

Page 9, line 11-22 - the paragraph has been amended as follows:

The protected zone 12 further preferably includes an opening with an input and an output, wherein a pressure control valve (PCV) 40 is installed. The pressure control valve (PCV) 40 provides fluid communication between the input and output of the opening and is dimensioned, in a manner known in the art, so as to allow for fluid communication therebetween when the positive pressure within a protective zone is greater than about [2.0] 1.5 inches wg. Preferably the protected zone 12 includes the use of one pressure control valves 40, which is used to relieve excess air from the protected zone 12 and prevent excessive pressure therein from creating undesired air leaks.

Page 10, line 5 through page 11, line 9 - the paragraph has been amended as follows:

The preheater 44 conditions the air before it enters the three-stage air filter apparatus 18, which may be further described with reference to Fig. 2. As seen in Fig. 2, the three filters 20, 22, and 24 of the three-stage air filter apparatus 18, already discussed with reference to Fig. 1, are annular in shape and coaxially arranged, with filter 20 being dimensioned to be insertable into filter 22 which, in turn, is dimensioned so as to be insertable into filter 24. The filters 20, 22, and 24 are radial flow types, wherein air enters the inner (filter 20) diameter area and flows radially outward through the larger (filter 24) diameter surface. The first filter 20 has a typical outer diameter of twelve (12) inches and has a typical length of 10 inches. The first filter is a pleated-medium which filters and removes particles of at least a first or relatively small size. The second filter 22 filters and removes aerosols and particulates of a size which is less than the first size of the particles being removed by the first filter 20. The second filter 22 is selected of a material, known in the art, for removing solid and aerosol chemical, biological and radiological contaminants. The third filter 24 comprises a gas adsorber which removes gases. The third filter 24 contains activated charcoal (asym-teda charcoal (chromium free)) selected, in a manner known in the art, for removing chemical

warfare gases. The placement of the three-stage air filter apparatus 18 and further details thereof within a system, such as that of system 10, may be further described in reference to Fig. 3.

Page 11, lines 10-16 - the paragraph has been amended as follows:

Fig. 3 illustrates one three-stage air filter apparatus 18 further having a gas cover 46 that is placed over the third filter 24 and a NEPA cover 48 which is placed over the second filter 22 and a clamp 52, which is over the third filter 20. The gas cover 46 and NEPA cover 48 [is] are attached by a nut 50, whereas the third filter 20 is attached by way of a clamp 52 and a nut 54.

Page 12, lines 3-11 - the paragraph has been amended as follows:

The input air originally from inlet 16 of Fig. 1 is indicated in Fig. 3 by directional arrow 62, and a watertight access door 64, similar to those used for the airlock 32, is generally indicated by reference number 64 and forms part of a bulkhead 66. The support for the openings 56 is provided by the bulkhead 68 and the structural support of the outer plenum 58 is provided by a deck 70. The output air exiting from the outer plenum 58 is indicated in Fig. 3 by directional arrow 60. The operation of the system 10 can be further described with reference to Fig. 4.

### **In the Claims**

1. (Amended) A system for supplying an enclosed protected zone having air intake means with an air supply having an inlet and that is filtered to remove contaminants created by chemical, biological or radiological conditions, said system comprising[;]:

a) a three-stage air filter apparatus having an input fluidly coupled to said inlet and having an input, said three-stage air filter apparatus having a first, second and third coaxially arranged annular filters, with the first filter being disposed within the second filter and the second filter being disposed [with] within the third filter, and with the first filter being positioned closest to said input and the third filter being positioned closest to said output, said first filter filtering and removing



particulates of at least a first size, said second filter filtering and removing aerosols and particulates of a size which is less than said first size, and said third filter comprising a gas adsorber for removing gases; and

b) a supply fan having an input fluidly coupled to said output of said three-stage air filter apparatus and an output fluidly coupled to said air intake means of said protected zone, said supply fan supplying [a] air at a sufficient enough flow so as to provide said protected zone with a positive pressure.

5. (Amended) The system according to claim 4, further comprising an alarm device connected to receive the output of said transducer and generating an alarm signal when said output of said transducer is representative of a pressure of below about 0.5 in wg.

11. (Amended) A method for supplying an enclosed protected zone having an air supply having an inlet and that is filtered to remove contaminants created by chemical, biological or radiological conditions, said method comprising the steps of[:];

a) providing a three-stage air filter apparatus having an input fluidly coupled to said inlet and having an input, said three-stage air filter apparatus having a first, second and third coaxially arranged annular filters, with the first filter being disposed within the second filter and the second filter being disposed [with] within the third filter, and with the first filter being positioned closest to said input and the third filter being positioned closest to said output, said first filter filtering and removing particulates of at least a first size, said second filter filtering and removing aerosols and particulates of a size which is less than said first size, and said third filter comprising a gas adsorber for removing gases; and

b) providing a supply fan having an input fluidly coupled to said output of said three-stage air filter apparatus and an output fluidly coupled to said protected zone, said supply fan supplying a sufficient flow of air so as to provide said protected zone with a positive pressure within the range from about 0.5 in wg. to about 1.5 in wg.

14. (Amended) The method according to claim 13, further comprising the step of providing

an alarm device connected to receive the output of said transducer and generating an alarm signal when said output of said transducer is representative of a pressure of below about 0.5 in wg.

Claims 18-20 are added and read as follows:

1           --18. A system for supplying an enclosed protected zone with air cleaned of chemical,  
2 biological, and radiological contaminants at a flow rate sufficient to maintain a positive pressure  
3 within the protected zone, comprising:

4           a free-standing first filter that filters and removes particulates of at least a first size from the  
5 air;

6           a free-standing second filter that filters and removes aerosols and particulates of a size which  
7 is less than the first size from the air;

8           a free-standing third filter that adsorbs gases from the air; and

9           a blower pneumatically coupling the downstream side of the third filter with the protected  
10 zone,

11          wherein:

12          the first, second and third filters are annular filters axially nested one inside the other in the  
13 recited order; and

14          the first, second, and third filters are radial flow filters.--

1           --19. The system according to claim 18, further comprising:

2           a filter housing including an axial opening for receiving the first, second, and third filters,  
3 and an annular opening receiving cleaned air from the downstream side of the third filter; and

4           a plenum pneumatically coupling the annular opening and the blower.--

1           --20. The system according to claim 19, wherein the second and third filters are held in place  
2 by retaining mechanisms while the first filter is frictionally fit into the second filter to thereby permit  
3 change out of the first filter while the blower supplying the cleaned air to the protected zone is  
4 operating.--

CONTINUATION OF SERIAL NO: 09/504,396

ATTY. DOCKET NO.: NC79363A

PRELIMINARY AMENDMENT UNDER 37 C.F.R. §1.111

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